<u> THIR UNITED SHATES OF AMERICA</u>

TO ALL TO WHOM THESE PRESENTS SHALL COME;

Hioneer Hi-Bred International, Inc.

THECE AS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS ARE ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, FIGHRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC PLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR INGIT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE REPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROPAGATION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'PHB1V'

In Jestimonn Thereof, I have hereunto set my hand and caused the seal of the Hant Hariety Frotection Office to be affixed at the City of Washington, D.C. this third day of November, in the year two thousand and six.

Attest:

No.

Om John

Commissioner Plant Variety Protection Office Agricultural Marketing Service Sciculture

REPRODUCE LOCALLY. Include form number and o	late on all reprod	uctions			Form Approved - OMB No. 0581-0055
U.S. DEPARTME AGRICULTURAL SCIENCE AND TECHNOLOGY - F		IVICE	t t	ne Paperwork Reduction Act (PRA) of	
APPLICATION FOR PLANT VA			A) (7	oplication is required in order to determ U.S.C. 2421), Information is held con	mine if a plant variety protection certificate is to be issued nfidential until certificate is issued (7 U.S.C. 2426).
NAME OF OWNER Pioneer Hi-Bred Internation	nal, Inc.		2.	TEMPORARY DESIGNATION OR EXPERIMENTAL NAME	3. VARIETY NAME PHB1V
4. ADDRESS (Street and No., or R.F.D. No., City,	State, and ZIP Co	de, and Country)	5.	TELEPHONE (include area code)	FOR OFFICIAL USE ONLY
7301 NW 62 nd Avenue				515/270-4051	PVPO NUMBER
Johnston, IA 50131-0085				FAX (include area code)	AAAI AA AAA
,				515/253-2125	2004 00 201 FILING DATE
7. IF THE OWNER NAMED IS NOT A "PERSON",		8. IF INCORPORATED, GIVE		DATE OF INCORPORATION	11 11 25 11
ORGANIZATION (corporation, partnership, association	ciation, etc.)	STATE OF INCORPORATION IOWA	1	March 5, 1999	May 4, 2004
10. NAME AND ADDRESS OF OWNER REPRESE	ENTATIVE(S) TO S	SERVE IN THIS APPLICATION. (Firs.	t persor	listed will receive all pagers)	F FILING AND EXAMINATION FEES:
			. , , , , , , , , , , , , , , , , , , ,	Total vill resolve all papersy	\$ \$ 3652.00
Steven R. Anderson Research and Product Devel	onment				R DATE 5/4/04
P.O. Box 85	Орттопс				C CERTIFICATION FEE:
Johnston, IA 50131-0085		·			\$ \$768.00
					E DATE 9/29/06
11. TELEPHONE (Include area code)	12, FAX (includ	fe area code)		13. E-MAIL	, .
515/270-4051	515/25	·		steven.anderson@	Dpioneer.com
14. CROP KIND (Common Name)		AME (Botanical)			IN ANY TRANSGENES? (OPTIONAL)
CORN	Gramir			YES X NO	MENT TO TOO ENEO ! (OF TOTAL)
15. GENUS AND SPECIES NAME OF CROP		RIETY A FIRST GENERATION HYBE	RID?	IF SO, PLEASE GIVE THE AS	SSIGNED USDA-APHIS REFERENCE NUMBER FOR THE
Zea Mays	☐ YES	X NO		APPROVED PETITION TO DEREC	GULATE THE GENETICALLY MODIFIED PLANT FOR
19. CHECK APPROPRIATE BOX FOR EACH ATTA	 ACHMENT SUBMI	TTED		20. DOES THE OWNER SPECIFY	Y THAT SEED OF THIS VARIETY BE SOLD AS A CLASS
(Follow instructions on reverse)				OF CERTIFIED SEED? (See Sect	tion 83(a) of the Plant Variety Protection Act)
a. X Exhibit A. Origin and Breeding History	of the Variety			☐ YES (If "yes", answer i. 21. DOES THE OWNER SPECIFY	items 21 and 22 below) X NO (If "no", go to item 23) Y THAT SEED OF THIS VARIETY BE LIMITED AS TO
b. X Exhibit B. Statement of Distinctness				NUMBER OF CLASSES?	
c. X Exhibit C. Objective Description of Val				☐ YES ☐ NO	
 d.				IF YES, WHICH CLASSES? 22. DOES THE OWNER SPECIFY	☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED THAT SEED OF THIS VARIETY BE LIMITED AS TO
V		·		NUMBER OF GENERATIONS?	
 X Voucher Sample (2,500 viable untreate verification that tissue culture will be de repository) 				☐ YES ☐ NO	ER 1,2,3, etc. FOR EACH CLASS.
g. X Filing and Examination Fee (\$3,652), r		reasurer of the United			
States" (Mail to the Plant Variety Protect	tion Office)				GISTERED L. CERTIFIED cessary, please use the space indicated on the reverse.)
23. HAS THE VARIETY (INCLUDING ANY HARVES				24. IS THE VARIETY OR ANY CO	MPONENT OF THE VARIETY PROTECTED BY
FROM THIS VARIETY BEEN SOLD, DISPOSEI OTHER COUNTRIES?	JOF, IKANSFER	RED, OR USED IN THE U. S. OR			HT (PLANT BREEDER'S RIGHT OR PATENT)?
X YES 🗆 NO		•		□ YES X NO	
IF YES, YOU MUST PROVIDE THE DATE OF FOR EACH COUNTRY AND THE CIRCUMSTA					TRY, DATE OF FILING OR ISSUANCE AND ASSIGNED use space indicated on reverse.)
25. The owners declare that a viable sample of bas for a tuber propagated variety a tissue culture to					ccordance with such regulations as may be applicable, or
The undersigned owner(s) is(are) the owner of entitled to protection under the provisions of Section	this sexually repro 42 of the Plant Va	duced or tuber propagated plant vari ariety Protection Act.	iety, and	believe(s) that the variety is new, di	stinct, uniform, and stable as required in Section 42, and is
Owner(s) is (are) informed that false representa	tion herein can jed	opardize protection and result in pena	alties.		
SIGNATURE OF OWNER			SIGNA	TURE OF OWNER	1
•				town &	lesson
NAME (Please print or type)			NAME	(Please print or type)	www.
			Stev	ven R. Anderson	
CAPACITY OR TITLE	DATE	•		CITY OR TITLE	5/3/2004
			Res	earch Scientist	3/2/2007

CAPACITY OR TITLE

2004 00 201

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filling fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office Telephone: (301) 504-5518 FAX: (301) 504-5291

Homepage: http://www.ams.usda.gov/science/pvpo/pvp.htm

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 http://www.ams.usda.gov/lsg/seed.htm.

ITEM

- 19a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method:
- (2) the details of subsequent stages of selection and multiplication;
- (3) evidence of uniformity and stability; and
- (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
 - (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
- 20. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
- 23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
- 24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.
- 22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)
- 23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

United States, Nov. 1, 2003

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Exhibit A. Origin and Breeding History

Pedigree: PH2N1/PH226)XW6K21K211X

Pioneer Line PHB1V, Zea mays L., a yellow endosperm flint corn inbred with some dent characteristics, was developed by Pioneer Hi-Bred International, Inc. from the single cross hybrid PH2N1 X PH226 (PVP Certificate No. 9900383) using the pedigree method of plant breeding. Varieties PH2N1 and PH226 are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Variety PH2N1 was derived by pedigree selection from the single cross hybrid PHGG6 X PHBE2 (Certificate No. 9500200). Variety PHGG6 was derived by pedigree selection from the single cross hybrid PHP02 (PVP Certificate No. 8800212) X PHR03 (PVP Certificate No. 9100097). Selfing was practiced from the above hybrid (PH2N1 X PH226) for _8 generations using pedigree selection. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Windfall, Indiana as well as other Pioneer research locations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations again made for uniformity.

Variety PHB1V has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed _6 generations with careful attention paid to selection criteria and uniformity of plant type to assure genetic homozygousity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity and stability, and for _3 generations during the final stages of inbred development and seed multiplication. Very high standards for genetic purity have been established morphologically using field observations and electrophoretically using sound lab molecular marker methodology.

No variant traits have been observed or are expected in PHB1V.

The criteria used in the selection of PHB1V were yield, both per se and in hybrid combinations; late season plant health, grain quality, stalk lodging resistance, and kernel size, especially important in production. Other selection criteria include: ability to germinate in adverse conditions; disease and insect resistance; pollen yield and tassel size.

Exhibit A: Developmental history for PHB1V

Season/Year Pedigree Grown	Inbreeding Level of Pedigree Grown
PH2N1	F0 .
Summer 1996	
PH226	F0
Summer 1996	
PH2N1/PH226	F1
Winter 1996	
PH2N1/PH226)X	F2
Summer 1997	
PH2N1/PH226)XW6	F3
Winter 1998	
PH2N1/PH226)XW6K2	F4
Summer 1999	
PH2N1/PH226)XW6K21	F5
Winter 1999	
PH2N1/PH226)XW6K21K2	F6
Summer 2000	
PH2N1/PH226)XW6K21K21	F7
Winter 2000	
PH2N1/PH226)XW6K21K211	F8
Summer 2001	·
PH2N1/PH226)XW6K21K211X	F9.
,	SEED

^{*}PHB1V was selfed and ear-rowed from F3 through F8 generation.

#Uniformity and stability were established from F7 through F9 generation and beyond when seed supplies were increased.

Exhibit B: Novelty Statement

Variety PHB1V mostly resembles Pioneer Hi-Bred International, Inc. proprietary inbred line PH226 (PVP Certificate No. 9900383). Tables 1A and 1B show two sample t-tests on data collected primarily in Johnston and Dallas Center, IA. The traits collectively show measurable differences between the two varieties.

Exhibit B: Novelty Statement

Variety PHB1V has a greater cob diameter (27.9 mm vs 25.8 mm) than variety PH226 (Table 1A, 1B).

Variety PHB1V has a greater ear diameter (44.4 mm vs 38.4 mm) than variety PH226 (Table 1A, 1B).

Variety PHB1V has a shorter husk length (21.9 cm vs 26.1 cm) than variety PH226 (Table 1A, 1B).

Variety PHB1V has a greater kernel length (10.9 mm vs 9.0 mm) than variety PH226 (Table 1A, 1B).

Variety PHB1V has a small leaf angle (13.2 degrees vs 20.9 degrees) than variety PH226 (Table 1A, 1B).

Exhibit B: Novelty Statement Tables

and PH226. Each year varieties were grown in 3 locations that had different environmental conditions. Environments had different planting dates and were in Table 1A: Data from Johnston and Dallas Center, IA broken out by year and across environments are supporting evidence for differences between PHB1V different fields. A two-sample t-test was used to compare differences between means.

DataField YEAR	YEAR 1	VARIETY-VARIETY-Count-Count-Mean-IMean-	Count-C	Sount 2	Mean-I		Mean Diff	StdDeviation-StdDeviation-StdError-	tdDeviation-0	StdError-K	StdError-	P Popled Value Booled		Prob_(2-
cob diameter (mm)	2002PHB1V	PH226	15	<u>7</u>		25.9	17	1 242	1 OGD	0.321	0.074			
cob diameter (mm)	2003PHB1V	PH226	<u>5</u>	5	28.2	25.7	2.5	1.568	1 668	0.05	0.434	20 00 00 00	i z	0.00
ear diameter (mm)	2002PHB1V	PH226	70	π.	. 44 8.3	36.6	7.7	2.820	2.324	0.728	0.00		y c i α	0.000
ear diameter (mm)	2003PHB1V	PH226	15	15	44.5	40.2	4.3	2.446	1 521	0.631	0 303	200) u	9
husk length (cm)	2002PHB1V	PH226	5	15	21.6	25.2	-3.6	0.828	2.305	0.214	0.50 505 505	ο α	o r	0.00
husk length (cm)	2003PHB1V	PH226	15	15	22.3	26.9	7.4	1 438	1 624	0.371	0.000	0 7 80) c	0.00
kernel length (mm)	2002PHB1V	PH226	2	5	10.	& &	2.2	0.756	0.676	0 195	0.475	0 80) «	0000
kernel length (mm)	2003PHB1V	PH226	15	15	10.9	9.2	1.7	1.060	0.775	0.274	0 200	2 80	. A	000
eaf angle (degrees)	2002PHB1V	PH226	3,	5	13.7	21.7	هٰ 0.	4.761	5.653	1.229	1.460	0 00	4	
leaf angle (degrees)	2003PHB1V	PH226	15	15	12.7	20.1	-7.4	4.435	5.378	1.145	1.389	28	4	0000

Exhibit B. Novelty Statement Tables

between PHB1V and PH226. Environments had different planting dates and were in different fields. A two-sample t-test was used to Table 1B: Summary data from Johnston and Dallas Center, IA across years and environments are supporting evidence for differences compare differences between means.

DataField	VARIEM	VARIETY-VARIETY-Count-Count-Mean-Mean-Mean-	Sount 1	Sount-	Mean÷ I 1	2	Mean_Diff	StdDeviation-StdDeviation-StdError-StdError-	tdDeviation-§	tdError-	StdError-	dError 2 DF PooledValue Pooled	t t	Prob_(2- tail) Pooled
cob diameter (mm)	PHB1V	PH226	တ္တ	30	30 27.9 25.8	25.8	2.1	1.423	1.375	0.260	0.251	58	5.8	0000
ear diameter (mm)	PHB1V	PH226	99	30	30 44.4 38.4	38.4			2.660	0 474	1		σα	
husk length (cm)	PHB1V	PH226	30	99	30 21.9 26.1	26.1		\$	2 149	0.219	•		. c	0000
된	PHB1V	PH226	30	30	30 10.9	9.0		100000000000000000000000000000000000000	0.743	0.166	2		0 6	
leaf angle (degrees)	PHB1V	PHB1V PH226	90		30 13.2 20.9	20.9		:	5.482	1	1	:	c.	0000

United States Department of Agriculture, Agricultural Marketing Service Science and Technology, Plant Variety Protection Office National Agricultural Library Building, Room 400 Beltsville, MD 20705-2351

OBJECTIVE DESCRIPTION OF VARIETY CORN (Zea mays L.)

		COR	kiv (zea ma	ays ∟.)			
Name of Applicant(Pioneer Hi-Bred In		l Variety Seed	Source		I Variety Name o	or Temporary D	Designation
Address (Street & N	No., or R.F.D. No., City, State,	Zip Code and Country		FOR OFFICIA	L USE	I PVPO N	umber
7301 NW 62nd Ave	enue, P.O. Box 85, Johnston	Iowa 50131-0085	i			2004	400201
adding leading zero	ate number that describes the votes if necessary. Completenessary for an adequate variety des	should be striven for to	establish a	ed variety in the	spaces below. Rig ety description. Trai	ht justify whole its designated	numbers by by a "*" are
COLOR CHOICES	(Use in conjunction with Munse	ell color code to describe	all color ch	noices: describe	#25 and #26 in Cor	mmente sectio	יי
01. Light Green	06. Pale Yellow	11. Pink		e Purple	#25 and #20 in Coi	26. Other (
02. Medium Greer	- · · · · · · · · · · · · · · · · · · ·	12. Light Red	17. Pur		22. Tan	Zo. Other ((Describe)
03. Dark Green	08. Yellow-Orange	13. Cherry Red	18. Cold		23. Brown		
04. Very Dark Gre	-	14. Red	19. Whi		24. Bronze		
05. Green-Yellow	10. Pink-Orange	15. Red & White		te Capped	25. Variegated (E)escribe)	
STANDARD INBRE	D CHOICES [Use the most sin	oilar (in background and	maturity) o	f these to make	comparisons based	d on grow out t	rial datal:
Yellow Dent Famili		Yellow Dent (Unrelated)		i iliese to iliane	Sweet Corn:	Jon grow-out a	nai ualaj.
Family	Members	Co109, ND246	<i>,</i>			5125, P39, 213	22
B14	CM105, A632, B64, B68	Oh7, T232			010,10	5120,1 09, 210	, _
B37	B37, B76, H84	W117, W153R			Popcorn:		
B73	N192, A679, B73, Nc268	W182BN			•	3, 4722, HP301	HP7211
C103	Mo17, Va102, Va35, A682	***************************************			001000	, 4722, 111 001	, 111 121)
Oh43	A619, MS71, H99, Va26	White Dent:			Pipecorn:		
WF9	W64A, A554, A654, Pa91	Cl66, H105, Ky2	228		•	lo16W, Mo24W	i
1 TYPE (describe	intermediate types in "Comme	ents" section)			I Standard Inbre	ad Nama	VA26
	et, 2=Dent, 3=Flint, 4=Flour, 5	•	Pipecorn)		1 2 Type	ou manne	VA20
2. REGION WHER	E DEVELOPED IN THE U.S.A	•	······		I Standard Seed	d Source	AMES 19329
	est, 2=N.Central, 3=N.East, 4=		S.West, 7=		I _ Region	a cource	ANLO 19029
3. MATURITY (In R	Region Best Adaptability; show	Heat Unit formula in "Cor	mments" s	ection):	1		
DAYS	HEAT UNITS				I DAYS	HEAT	UNITS
<u>67</u>	1.534.5 From emergence	to 50% of plants in silk			i <u>62</u>		<u>,397.5</u>
<u>67</u>	1,522.8 From emergence	to 50% of plants in poller	n	`	l <u>61</u>	1	,389.7
· <u>2</u>	53 From 10% to 90%	pollen shed			1 2	<i>j</i> <u>1</u>	<u>63</u>
		optimum edible quality			·		
	From 50% silk to	harvest at 25% moisture			ı		
4. PLANT:		St	.Dev.	Sample Size	I Mean	St.Dev.	Sample Size
244.3 cm Plan	it Height (to tassel tip)		14.12	20		<u>12.95</u>	<u>20</u>
<u>108.7</u> cm Ear	Height (to base of top ear node		10.68	<u>20</u>		7.35	20
17.6 cm Leng	gth of Top Ear Internode		2.26	<u>20</u>		2.02	<u>20</u>
0.0 Average	Number of Tillers		0.02	<u>10</u>		0.03	<u></u>
1.0 Average	Number of Ears per Stalk		<u>0.09</u>	<u>10</u>		<u>0.11</u>	<u>10</u>
3 Anthocy	anin of Brace Roots: 1=Absen	t, 2=Faint, 3=Moderate, 4	4=Dark		i <u>1</u>		

3.0 cm Width of Ear Node Leaf	Application Variety Data	Page 2	1	Standard Inbred		007000
3.9. orn Width of Ear Node Leaf	5. LEAF	St.Dev.	Sample Size 1		St.Dev.	Sample Size
82.5 on Length of Ear Node Leaf 3.05 20 75.9 3.88 6.5 Number of Flaves above tope ar 0.51 20 6.5 20 73 14.4 Degrees Leaf Angle (Measure from 2nd leaf above car at anthesis to stakk above leaf) 4.67 20 12.5 5.00 20 13.2 12.5 5.00 20 14.4 Degrees Leaf Angle (Measure from 2nd leaf above car at anthesis to stakk above leaf) 4.67 20 12.5 5.00 20 14.4 Leaf Color (Mansell Code) 2.56Y 3.04 4.67 20 14.6 Leaf Color (Mansell Code) 2.56Y 3.04 4.8 Degrees Leaf Angle (Material Planescene (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.0 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal Creases (Rate on scale from 1=none to 9=many) 4.1 Lengitudinal	9.0 cm Width of Ear Node Leaf					20
6.5. Number of leaves above top car 0.51 20 1 9.3 0.73 1.4. Boggans Leaf Angle (Measure from 2nd leaf above ear at anthesis to stak above leaf) 4 1.4. Expose Leaf Angle (Coole) 7.567 3/4 1.4. Expose Leaf Angle (Coole) 4. Expose Leaf Angle (Coole) 7.567 3/4 1.4. (Munsell Coole) 567 3/4 4 (Munsell Coole) 567 3/4 4 4. (Mu	82.5 cm Length of Ear Node Leaf	<u>3.05</u>				<u></u>
14.4 Degrees Loaf Angle	6.5 Number of leaves above top ear	<u>0.51</u>		<u>6.3</u>	0.73	20
1 4 Led Color (Munsell Code) 7.567/34 4 (Munsell Code) 5697/34 4 (Munsell Code) 5697/34 4 (Munsell Code) 5697/34 3 Leaf Sheath Pubescence (Rate on scale from 1-none to 9-many)	14.4 Degrees Leaf Angle					20
3 Leaf Sheath Pubescence (Rate on scale from 1-none to 9-many) 4 4 4 4 4 4 4 4 4	(Measure from 2nd leaf above ear at anthesis to	stalk above leaf)	1			
Marginal Waves (Rate on scale from 1=none to 9=many)	4 Leaf Color (Munsell Code) 7.5GY 3/4		1	4 (Munse	ll Code) 5G	<u>Y 3/4</u>
Conditional Creases (Rate on scale from 1=none to 9=many)	3 Leaf Sheath Pubescence (Rate on scale from	1=none to 9=like peach	fuzz) I	<u>4</u>		
S. TASSEL: SLDev. Sample Size Mean SLDev. Sample Size Mean SLDev. Sample Size 3.39 Manual SLDev. Sample Size 1.12 20 1.18,7 3.39 3.49 541, cm tassel Length S.16 20 61.2 3.52 3.52 (from top lead collar to tassel tip) S. Tomo top lead collar top lead to tassel tip S. Tomo top lead to tassel ti	Marginal Waves (Rate on scale from 1=none to	9=many)	1	******		
S.3 Number of Primary Lateral Branches	Longitudinal Creases (Rate on scale from 1=no	one to 9=many)	Ī	_		
S.3 Number of Primary Lateral Branches	6. TASSEL:	St Dev	Sample Size 1	Mean	St Dev	Sample Size
14.3 Degrees Branch Angle from Central Spike 4.92 20 37.3 5.49 54.1 of tassel Length 5.16 20 61.2 3.52 54.1 of tassel Length 7.2 5.16 20 61.2 3.52 (from top laaf collar to tassel tip) § Pollen Shed (Rate on scale from 0=male sterile to 9=heavy shed) § Pollen Shed (Rate on scale from 0=male sterile to 9=heavy shed) § 1 Anifher Color (Munsell Code) 5GY 7/8 1 (Munsell Code) 10Y 8/8 2 (Munsell Code) 5GY 5/8 1 (Munsell Code) 5GY 5/8 2 (Munsell Code) 2.5Y 8.5Y 2 1 (Munsell Code)			•			20
5.16	The state of the s					<u>20</u>
(from top leaf collar to tasset lip) 5						<u>20</u> 20
5 Polfen Shed (Rate on scale from D=male sterile to 9=heavy shed) 1 Anther Color (Munsell Code) 10Y 8/8 2 Glume Color (Munsell Code) 10Y 8/8 1 (Munsell Code) 5GY 7/8 1 (Munsell Code) 5GY 7/8 1 (Munsell Code) 5GY 7/8 1 (Munsell Code) 5GY 5/8 1 (Munse		<u>0. 10</u>	<u> 20</u> 1	01.2	<u>0.02</u>	20
1 Anther Color (Munsell Code) 10Y 8/8 2 Glume Color (Munsell Code) 50Y 7/8 1 Bar Glumes (Glume Bands): 1=Absent, 2=Present 7a. EAR (Unhusked Data): 9 Silk Color (3 days after emergence) (Munsell Code) 7.5Y 8.5/6 1 1 Munsell Code 55Y 5/8 2 Fresh Husk Color (25 days after 50% silking) (Munsell Code) 5 5 6 6 1 2 Munsell Code 5 5 5 5 5 6 1 2 Munsell Code 5 5 5 5 5 5 5 5 5 5 5 5 6 1 2 Munsell Code 5 5 5 5 5 5 5 5 5 5 6 1 2 Munsell Code 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6 1 1 Munsell Code 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	the state of the s	to 9=heavy shed)		я		
2 Glume Color (Munsell Code) 5GY 7/8 1 Bar Glumes (Glume Bands): 1=Absent, 2=Present 1 Ta. EAR (Unhusked Data): 5 Sik Color (3 days after emergence) (Munsell Code) 2 Fresh Husk Color (25 days after 50% siking) (Munsell Code) 5 Sik Color (36 days after 50% siking) (Munsell Code) 5 Sik Color (36 days after 50% siking) (Munsell Code) 19 Dry Husk Color (25 days after 50% siking) (Munsell Code) 19 Dry Husk Color (35 days after 50% siking) (Munsell Code) 19 Dry Husk Color (36 days after 50% siking) (Munsell Code) 19 Dry Husk Clotor (36 days after 50% siking) (Munsell Code) 19 Munsell Code 2.5Y 8.5/2 2 Position of Ear at Dry Husk Stage: 1=Upright, 2=Horizontal, 3=Pendent 1		to o moury onea)	·		II Code) 10Y	. 8/8
1 Bar Glumes (Glume Bands): 1=Absent, 2=Present 7a. EAR (Unhusked Data): § Silk Color (3 days after emergence) (Munsell Code) 2 Fresh Husk Color (25 days after 50% silking) (Munsell Code) 5 FY 6/8 19 Dry Husk Color (25 days after 50% silking) (Munsell Code) 5 FY 9/2 2 Position of Ear at Dry Husk Stage: 1=Upright, 2=Horizontal, 3=Pendent 1	· · · · · · · · · · · · · · · · · · ·		i	_ •		
§ Silk Color (3 days after emergence) (Mussell Code)		ent	i		" code) <u>so</u>	1 3/0
2 Fresh Husk Color (25 days after 50% silking) (Munsell Code) 59 46 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 59 90 1 19 Munsell Code 2.57 8.5/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 59 90 1 19 Munsell Code 2.57 8.5/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 59 90 1 19 Munsell Code 2.57 8.5/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 1 3 10 10 10 10 10 10 10 10 10 10 10 10 10	7a. EAR (Unhusked Data):		1			
2 Fresh Husk Color (25 days after 50% silking) (Munsell Code) 5GY 6/8 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 5Y 9/2 19 Munsell Code 2.5Y 8.5/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 5Y 9/2 19 Munsell Code 2.5Y 8.5/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 5Y 9/2 19 Munsell Code 2.5Y 8.5/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 5Y 9/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 19 Munsell Code 2.5Y 8.5/2 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 19 Dry Husk Color (65 days after 50% silking) (Munsell Code) 19 Dry Husk Color (75 days after 50% silking) (Munsell Code) 2.5Y 8.5/2 19 Dry Husk Color (75 days after 50% silking) (Munsell Code) 2.5Y 8.5/2 19 Dry Husk Color (75 days after 50% silking) (Munsell Code) 2.5Y 8.5/2 19 Dry Husk Color (75 days after 50% silking) (Munsell Code) 2.5Y 8.5/2 19 Dry Husk Color (75 days after 50% silking) (Munsell Code) 2.5Y 8.5/2 19 Dry Husk Color (75 days after 50% silking) (Munsell Code) 2.5Y 8.5/2 19 Dry Husk Color (75 days after 50% silking) (Munsell Code) 2.5Y 8.5/2 19 Dry Munsell Code) 2.5Y 8.5/2 19 Dry Munsell Code 2.5Y 8.5/2 19 Dry Munsell Code) 2.5Y 8.5/2 19 Dry Munsell Code 2.5Y 8.5/2 19 Dry Munsell Code) 2.5Y 8.5/2 19 Dry Munsell Code) 2.5Y 8.5/2 19 Dry Munsell Code) 2.5Y 8.5/2 19 Dry Munsell Code 2.5Y 8.5/2 19 Dry Munsell Code) 2.5Y 8.5/2 19 Dry Munsell Code 2.5Y 9.5/2 19 Dr	6 Silk Color (3 days after emergence) (Munsell C	Code) 7.5	iY 8.5/6	1 Munsel	Code 2.50	SY 8/6
19 Dry Husk Color (85 days after 50% silking) (Munsell Code) 5Y 9/2 19 Munsell Code 2.5Y 8.5/2 2 Position of Ear at Dry Husk Stage: 1=Upright, 2=Hortzontal, 3=Hondent 1						
2 Position of Ear at Dry Husk Stage: 1=Upright, 2=Horizontal, 3=Pendent 5 Husk Tightness (Rate on scale from 1=very loose to 9=very tight 1 Husk Extension (at harvest): 1-Short(ears exposed), 2=Medium (<8cm), 3=Long (8-1) 10cm beyond ear tip), 4=Very Long (>10cm) 7b. EAR (Husked Ear Data) 11-C EAR (Husked Ear Data)				_	· · · · · · · · · · · · · · · · · · ·	
\$ Husk Tightness (Rate on scale from 1=very loose to 9=very tight 2 Husk Extension (at harvest): 1=Short(ears exposed), 2=Medium (<8cm), 3=Long (8-1) 3 10cm beyond ear tip), 4=Very Long (>10cm) 7b. EAR (Husked Ear Data)						
2 Husk Extension (at harvest): 1=Short(ears exposed), 2=Medium (<8cm), 3=Long (8-10cm beyond ear tip), 4=Very Long (>10cm beyond ear tip), 4=Very Long (>10cm) 7b. EAR (Husked Ear Data) St. Dev. Sample Size Mean St.Dev. Sample Size			1			
7b. EAR (Husked Ear Data) 7b. EAR (Husked Ear Data) 14.7 cm Ear Length 2.43 20 14.1 2.10 2 44.2 mm Ear Diameter at mid-point 2.50 20 41.7 2.55 2 130.8 gm Ear Weight 39.30 20 102.0 34.38 2 15.7 Number of Kernel Rows 1.63 20 15.5 1.10 2 2 Kernel Rows: 1=Indistinct, 2=Distinct 1 2 1 10.6 cm Shank Length 2.37 20 11.4 2.35 2 2 Ear Taper: 1=Slight cyl., 2=Average slightly con., 3=Extreme conical 3. KERNEL (Dried): St. Dev. Sample Size Mean St. Dev. Sam			n). 3=Long (8- L	3		
14.7 cm Ear Length		/ 1 =	1	<u>s</u>		
14.7 cm Ear Length	7b. EAR (Husked Ear Data)	St. Dev.	Sample Size 1	Mean	St.Dev.	Sample Size
### 44.2 mm Ear Diameter at mid-point	14.7 cm Ear Length	2.43	•			<u>20</u>
130.8 gm Ear Weight 39.30 20 102.0 34.38 25.5 1.10 15.7 Number of Kernel Rows 1.63 20 15.5 1.10 2 15.5 1.10 15.5						<u>==</u> <u>20</u>
15.7 Number of Kernel Rows 1.63 20 15.5 1.10 2						<u>20</u>
2 Kernel Rows: 1=Indistinct, 2=Distinct 1 Row Alignment: 1-Straight, 2=Slightly Curved, 3=Spiral 1 Row Alignment: 1-Straight, 2=Slightly Curved, 3=Spiral 2 10.6 cm Shank Length 2 237 20 11.4 2.35 2 2 Ear Taper: 1=Slight cyl., 2=Average slightly con., 3=Extreme conical 3 KERNEL (Dried): 4 L10.	15.7 Number of Kernel Rows					20
1 Row Alignment: 1=Straight, 2=Slightly Curved, 3=Spiral			·			
10.6 cm Shank Length		3=Spiral	ì			
2 Ear Taper: 1=Slight cyl., 2=Average slightly con., 3=Extreme conical 2 2 3 5 5 5 5 5 5 5 5 5		•	20 I		2 35	<u>20</u>
10.9 mm Kernel Length	=		20		2.00	20
10.9 mm Kernel Length	3. KERNEL (Dried):	St.Dev.	Sample Size 1	Mean	St.Dev.	Sample Size
7.9 mm Kernel Width 0.64 20 I 8.1 0.79 5.0 mm Kernel Thickness 0.60 20 I 4.3 0.44 52.7 % Round Kernels (Shape Grade) 18.52 11 I 22.3 9.51 1 Aleurone Color Pattern: 1=Homozygous, 2=Segregating (describe) I 1 (describe) 7 Munsell Code 2.5Y 8/14 2 Aleurone Color (Munsell Code) 1.25Y 7/14 I 7 Munsell Code 2.5Y 8/14 2 Hard Endosperm Color (Munsell Code) 10YR 6/12 I 7 Munsell Code 2.5Y 8/14 3 Endosperm Type: 1=Sweet(su1), 2=Extra Sweet(sh2), 3=Normal Starch, 4=High I 3 (describe) Amylose Starch, 5=Waxy Starch, 6=High Protein, 7=High Lysine, 8=Super Sweet I (se), 9=High Oil, 10=Other						<u>20</u>
5.0 mm Kernel Thickness 0.60 20 I 4.3 0.44 4.3 0.44 52.7 % Round Kernels (Shape Grade) 18.52 11 I 22.3 9.51 2 1 Aleurone Color Pattern: 1=Homozygous, 2=Segregating (describe) I (describe) 1 (describe) I (describe) 7 Aleurone Color (Munsell Code) 1.25Y 7/14 I 7 Munsell Code 2.5Y 8/14 7 Hard Endosperm Color (Munsell Code) 10YR 6/12 I 7 Munsell Code 2.5Y 8/14 3 Endosperm Type: 1=Sweet(su1), 2=Extra Sweet(sh2), 3=Normal Starch, 4=High I 3 (describe) 3 (describe) Amylose Starch, 5=Waxy Starch, 6=High Protein, 7=High Lysine, 8=Super Sweet I (se), 9=High Oil, 10=Other 1 26.1 4.99 31.2 gm Weight per 100 kernels (unsized sample) 4.73 11 1 26.1 4.99 26.1 4.99 31.2 gm Weight per 100 kernels (unsized sample) 5t.Dev. Sample Size I Mean St.Dev Sample Size I Mean						<u>20</u>
52.7 % Round Kernels (Shape Grade) 18.52 11 I 22.3 9.51 2 1 Aleurone Color Pattem: 1=Homozygous, 2=Segregating (describe) I 1 (describe) I 1 (describe) I 2.5Y 8/14 I 7 Munsell Code 2.5Y 8/14 I 7 Munsell Code 2.5Y 8/14 I 7 Munsell Code 2.5Y 8/14 I I 3 (describe) I I I 4 (describe) I						<u>20</u>
1 Aleurone Color Pattern: 1=Homozygous, 2=Segregating (describe) 1 (describe) 2 (describe) 1 (describe) 2 (describe) 3 (describe) 2 (describe) 4 (describe) 7 (describe) 8 (describe) 9 (describe)						11
7 Aleurone Color (Munsell Code) 1.25Y 7/14 I 7 Munsell Code 2.5Y 8/14 7 Hard Endosperm Color (Munsell Code) 10YR 6/12 I 7 Munsell Code 2.5Y 8/14 3 Endosperm Type: 1=Sweet(su1), 2=Extra Sweet(sh2), 3=Normal Starch, 4=High I 3 (describe) Amylose Starch, 5=Waxy Starch, 6=High Protein, 7=High Lysine, 8=Super Sweet I (se), 9=High Oil, 10=Other			<u></u> '			-11
7 Hard Endosperm Color (Munsell Code) 10YR 6/12 1 7 Munsell Code 2.5Y 8/14 3 Endosperm Type: 1=Sweet(su1), 2=Extra Sweet(sh2), 3=Normal Starch, 4=High 1 3 (describe) Amylose Starch, 5=Waxy Starch, 6=High Protein, 7=High Lysine, 8=Super Sweet 1 (se), 9=High Oil, 10=Other				— ·	• -	5V 8/1/
3 Endosperm Type: 1=Sweet(su1), 2=Extra Sweet(sh2), 3=Normal Starch, 4=High I Amylose Starch, 5=Waxy Starch, 6=High Protein, 7=High Lysine, 8=Super Sweet I (se), 9=High Oil, 10=Other			' 		· · · · · · · · · · · · · · · · · · ·	
Amylose Starch, 5=Waxy Starch, 6=Hígh Protein, 7=High Lysine, 8=Super Sweet (se), 9=High Oil, 10=Other			h 4-Hiah 1			.51 6/14
(se), 9=High Oil, 10=Other				ž (desciir		
O. COB: St.Dev. Sample Size I Mean St.Dev Sample Size I 1.47 10 Cob Color (Munsell Code) 2.5YR 4/8 I 19 Munsell Code 2.5Y 9/2		ı, /=⊓igii Eysiile, o=Sul 	er Sweet I			•
27.8 mm Cob Diameter at mid-point 1.25 20 I 25.5 1.47 10 Cob Color (Munsell Code) 2.5YR 4/8 I 19 Munsell Code 2.5Y 9/2	31.2 gm Weight per 100 kernels (unsized sample)	<u>4.73</u>	ו <u>11</u> 1	<u>26.1</u>	4.99	<u>11</u>
27.8 mm Cob Diameter at mid-point 1.25 20 I 25.5 1.47 10 Cob Color (Munsell Code) 2.5YR 4/8 I 19 Munsell Code 2.5Y 9/2	D. COB:	St Dev	Sample Size !	Mean	St.Dev	Sample Size
10 Cob Color (Munsell Code) 2.5YR 4/8 I 19 Munsell Code 2.5Y 9/2						20
Application Variety Data	•		<u> </u>			
	Application Variety Data			Standard Inbred	Data	

Standard Inbred Data

10. DISEASE RESISTANCE (Rate from 1(most susceptible) to 9 (most resistant); leave blank	1	
if not tested; leave Race or Strain Options blank if polygenic):	ı	
A. Leaf Blights, Wilts, and Local Infection Diseases	1	
_ Anthracnose Leaf Blight (Colletotrichum graminicola)	1	Anthracnose Leaf Blight
4 Common Rust (Puccinia sorghi)	1	4 Common Rust
Common Smut (Ustilago maydis)	ı	_ Common Smut
Eyespot (Kabatiella zeae)	I	Eyespot
Goss's Wilt (Clavibacter michiganense spp. nebraskensis)	I	Goss's Wilt
7 Gray Leaf Spot (Cercospora zeae-maydis)	I	3 Gray Leaf Spot
_ Helminthosporium Leaf Spot (Bipolaris zeicola) Race	I	_ Helminthosporium Leaf Spot Race
6 Northern Leaf Blight (Exserohilum turcicum) Race	1	3 Northern Leaf Blight Race
Southern Leaf Blight (Bipolaris maydis) Race	l	Southern Leaf Blight Race
Southern Rust (Puccinia Polysora)	I	2 Southern Rust
Stewart's Wilt (Erwinia stewartii)	1	Stewart's Wilt
_ Other (Specify)	i	_ Other (Specify)
Systemic Diseases	1	
Corn Lethal Necrosis (MCMV and MDMV)	1	Corn Lethal Necrosis
9 Head Smut (Sphacelotheca reiliana)	1	8 Head Smut
_ Maize Chlorotic Dwarf Virus (MCDV)	I	_ Maize Chlorotic Dwarf Virus
_ Maize Chlorotic Mottle Virus (MCMV)	1	_ Maize Chlorotic Mottle Virus
3 Maize Dwarf Mosaic Virus (MDMV) Strain	ı	6 Maize Dwarf Mosaic Virus Strain
_ Sorghum Downy Mildew of Corn (Peronosclerospora sorghi)	1	_ Sorghum Downy Mildew of Corn
Other (Specify)	1	_ Other (Specify)
Stalk Rots	1	
7 Anthracnose Stalk Rot (Colletotrichum graminicola)	1	3 Anthracnose Stalk Rot
_ Diplodia Stalk Rot (Stenocarpella maydis)	i	_ Diplodia Stalk Rot
Fusarium Stalk Rot (Fusarium moniliforme)	l	_ Fusarium Stalk Rot
_ Gibberella Stalk Rot (Gibberella zeae)	l	_ Gibberella Stalk Rot
_ Other (Specify)	1	_ Other (Specify)
Ear and Kernel Rots	i	
_ Aspergillus Ear and Kernel Rot (Aspergillus flavus)	l	_ Aspergillus Ear & Kernel Rot
8 Diplodia Ear Rot (Stenocarpella maydis)	I	1 Diplodia Ear Rot
5 Fusarim Ear and Kernel Rot (Fusarium moniliforme)	ı	5 Fusarium Ear & Kernel Rot
6 Gibberella Ear Rot (Gibberella zeae)	. 1	5 Gibberella Ear Rot
_ Other (Specify)	I C	Other (Specify)

Application Variety Data		Page 4	I Standard Inbred Data	
11. INSECT RESISTANCE (F	Rate from 1(most susceptible) to 9 (r	nost resistant); Leave blank		
if not tested		St. Dev. Sample Size	e I St. Dev.	Sample Size
_ Banks Grass Mite (0	Oligonychus pratensis)	·	I Banks Grass Mite	•
Corn Earworm (Helicover)			I Corn Earworm	
_ Leaf Feeding	•		Leaf Feeding	
	_mg larval wt.		_ Lear reeding	
_ Ear Damage	9 10.170.111.	·		
- •	nopalosiphum maidis)		Ear Damage	
			Corn Leaf Aphid	
	arpophilus dimidiatus)		Corn Sap Beetle	
European Corn Borer (Os	·		I European Corn Borer	
	cally Whorl Leaf Feeding)		I 1 st Generation	
	pically Leaf Sheath-Collar Feeding)		i _ 2 nd Generation	
Stalk Tunneling:	cm tunneled/plant		l	
Fall Armyworm (Spodopte	ra frugiperda)		I Fall Armyworm	
_ Leaf-Feeding			Leaf-Feeding	
Silk-Feeding	ma larval wt.			
_ Maize Weevil (Sitoph			Maize Weevil	
_ Northern Rootworm	(Diabrotica barberi)		l Northern Rootworm	
	(Diabrotica undecimpunctata)		Northern Rootworm	
	The state of the s	•	Southern Rootworm	
Southwestern Corn Borer	(Diatraea grandiosella)		Southwestern Corn Borer	
Leaf Feeding			Leaf Feeding	
Stalk Tunneling:				
	Vite (Tetranychus urticae)		Two-spotted Spider Mite	
_ Western Rootworm (Diabrotica virgifera virgifera)		I _ Western Rootworm	
_ Other (Specify)	4,		I Other (Specify)	_
12. AGRONOMIC TRAITS:			I	
	ys after anthesis) (Rate on scale fro	m 1=worst to 9=excellent)	I <u>3</u> Stay Green	
% Dropped Ears (at 65	5 days after anthesis)		I % Dropped ears	
_ % Pre-anthesis Brittle	e Snapping		I % Pre-anthesis Brittle Snap	ping
30 % Pre-anthesis Root	Lodging		I 35 % Pre-anthesis Root Lodgi	
28 % Post-anthesis Roo	t Lodging (at 65 days after anthesis)	*	l 28 Post-anthesis Root Lodging	•
	Inbred Per Se (at 12-13% grain mo		4,087.0 Yield	,
13. MOLECULAR MARKERS:	(0=data unavailable; 1=data availat	le but not supplied; 2=data	supplied.)	
Lisozymes	RFLP's	_ RAPD's	_ Other (Specify)	
<u>r</u> 1002)00	_ 111 21 3	_ 1741 D3	_ Other (Specify)	
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J.S. Department of Agriculture	1936, 1937. Yearbook.			

COMMENTS (e. g. state how heat units were calculated, standard inbred seed source, and/or where data was collected. Continue in Exhibit D) Insect, disease, brittle snapping and root lodging data are collected mainly from environment where variability for the trait can be obtained within the experiment.

Our experimental design was set up in a typical complete block design commonly used in agricultural corn research experiments using three locations/environments. One replication was grown at each location. This is one more environment than is required according to the PVP application instructions. Our approach was to test the variety in more than 1 location (as instructed) while also allowing us the extra location/environment if there should be an unexpected failure at a location due to weather or other problems. There may also be situations where an additional year of testing was conducted resulting in 2 years of trial data. There would likely be more variability due to soil type differences, nutrients, or weather typical of different testing environments than if all three trials were grown in the same field on the same farm with the same planting dates in the same year. If you recommend that all locations/environments are grown in the same field with the same planting dates and same year, please let us know and we will adjust our 2007 procedures.

The experimental design and methods for 2003 were as follows:

Please update the exhibit C addendum with this paragraph:

The experiment procedures involved three environments with different planting dates, planted in 17.42 ft. rows with 2 rows for each variety. Approximately 24-30 plants emerged in each of 2 rows for a total of around 48 to 60 plants being evaluated at each location and 144 to 180 plants across locations. For plant level traits, we sampled 5 representative plants from the 2 rows of the 2 row plot (group) of plants at each location. For plot level traits we evaluated the 2 row plot (group) and gave a representative score or average on the 48-60 plants in the group within an experiment.

Some traits can be especially variable under different environmental factors influenced by weather, soil type, or planting dates. Varying temperatures or day length could impact the meristem growth during various tissue differentiation stages. The meristem differentiation of the ear and other tissues could be impacted as well as the success of pollination during flowering and frequency of kernel abortion during grain fill. Such variation could impact some of the traits that you mention because our experiment design does not grow all of the trials in the same field with the same planting date.

I would be happy to share detailed protocols or discuss with you in more detail the sampling, experiment design, reporting, and the conscientious evaluations that went into the characterization of the data...

CLARIFICATION OF DATA IN EXHIBITS B AND C 2004 00 201

Please note the data presented in Exhibit B and C, "Objective Description of Variety," are collected primarily at Johnston and Dallas Center, Iowa. The data in Tables 1A and 1B are from two sample t-tests using data collected in Johnston and Dallas Center, IA. These traits in exhibit B collectively show distinct differences between the two varieties.

REPRODUCE LOCALLY. Include form number and edition date on all reproductions. FORM APPROVED - OMB NO. 0581-0055 U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held **EXHIBIT E** confidential until the certificate is issued (7 U.S.C. 2426). STATEMENT OF THE BASIS OF OWNERSHIP 1.NAME OF APPLICANT(S) 2. TEMPORARY DESIGNATION VARIETY NAME OR EXPERIMENTAL NUMBER PIONEER HI-BRED INTERNATIONAL, INC. PHB1V 4 .ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 5. TELEPHONE (include area code) FAX (include area code) 7301 NW 62nd AVENUE 515-270-4051 515-253-2125 P.O.BOX 85 7.PVPO NUMBER **JOHNSTON, IA 50131-0085** 2004 00 201 8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain: 9.Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country 10. Is the applicant the original owner? ☑ YES ☐ NO If no, please answer one of the following: a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)? ☐ YES ☐ NO if no, give name of country b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

Pioneer Hi-Bred International, Inc. (PHI), Des Moines, Iowa, and/or its wholly owned subsidiary Pioneer Overseas Corporation (POC), Des Moines, Iowa, is the employer of the plant breeders involved in the selection and development of PHB1V. Pioneer Hi-Bred International and/or Pioneer Overseas Corporation has the sole rights and ownership of PHB1V pursuant to written contracts that assign all rights in the variety to PHI and/or POC at the time such variety was created. No rights to this variety are retained by any individuals.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

☑ YES ☐ NO If no, give name of country

- 1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
- If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
- 3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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